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DOCUMENT-IDENTIFIER: US 20020182258 A1

TITLE: Microparticles for delivery of nucleic acid

Summary of Invention Paragraph:

[0030] In another embodiment, the invention features a process for preparing microparticles. A first solution, including a polymer dissolved in an organic solvent, is mixed (e.g., sonication, homogenization, vortexing, or microfluidization) with a second solution, which includes a nucleic acid dissolved or suspended in a polar or hydrophilic solvent (e.g., an aqueous buffer solution containing, for instance, ethylenediaminetetraacetic acid, or tris(hydroxymethyl) aminomethane, or combinations thereof). The mixture forms a first emulsion. The first emulsion is then mixed with a third solution which can include a surfactant such as Pluronic, e.g., Pluronic F-68 (Sigma-Aldrich Co.), to form a second emulsion containing microparticles of polymer matrix and nucleic acid. The mixing steps can be executed, for example, in a homogenizer, vortex mixer, microfluidizer, or sonicator. Both mixing steps are carried out in a manner that minimizes shearing of the nucleic acid while producing microparticles on average smaller than 100 microns in diameter.

Summary of Invention Paragraph:

[0055] In another embodiment, the invention includes a process for preparing lipid-containing microparticles. The steps include providing a first solution which contains a polymer dissolved in an organic solvent, and providing a second solution which includes a nucleic acid dissolved or suspended in a polar or hydrophilic solvent. The first and second solutions are mixed to form a first emulsion. The first emulsion is then mixed with a third solution to form a second emulsion. At least one of the first, second and third solutions also includes a lipid or lipids. Both mixing steps are carried out in a manner that minimizes shearing of the nucleic acid while producing microparticles having an average diameter smaller than 100 microns.

CLAIMS:

37. A process for preparing microparticles, comprising: (1) providing a first solution comprising a polymer dissolved in an organic solvent; (2) providing a second solution comprising a nucleic acid dissolved or suspended in a polar or hydrophilic solvent; (3) mixing the first and second solutions to form a first emulsion; and (4) mixing the first emulsion with a third solution to form a second emulsion; wherein at least one of the first, second, and third solutions comprises a lipid; and wherein both mixing steps are carried out in a manner that minimizes shearing of the nucleic acid while producing microparticles having an average diameter smaller than 100 microns.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)